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Evaluation of percutaneous blind liver needle biopsy results in chronic hepatitis B patients in a state hospital without interventional radiology

Hepatitis B patients in a state hospital without interventional radiology

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Abstract
Aim: The aim of the present study is to retrospectively evaluate the results of patients who underwent percutaneous blind liver biopsy in a clinic without interventional radiology between 2016 and 2018.
Material and Methods: A total of 54 patients who underwent liver biopsy for chronic hepatitis B between June 2016 and June 2018 in our hospital were included in this study. Demographic data such as age, sex, alanine aminotransferase (ALT), aspartate aminotransferase (AST), HBeAg, Anti-HBe, HBV DNA levels were obtained from the hospital automation system and liver biopsy results were obtained from the pathology recording system.
Results: Mortality or any other major complications (such as organ perforation, massive bleeding, or hemoperitoneum) were not observed in this study. However, liver tissue could not be removed in 3 patients. The number of patients with normal ALT (<40 U / L) was 45 (83.3%). The pathology of 31 (68.7%) of these patients was fibrosis ≥2 and/or HAI≥6. Oral antiviral therapy was started in 40 patients. HBV DNA of 33 (82.5%) patients whose treatment was initiated was found to be negative at the 6th month of the treatment.
Discussion: Liver needle biopsy is still used as the gold standard in the diagnosis and treatment of chronic hepatitis B patients. Percutaneous blind liver needle biopsy can be performed in chronic hepatitis B patients when there is no interventional radiology in the diagnosis. In addition, it was thought that liver biopsy should be performed in patients with high HBV DNA even if ALT values were normal.

Keywords
Liver Needle Biopsy, Chronic Hepatitis B, Gold Standard

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Introduction

Hepatitis B virus (HBV) affects a significant portion of the population and is characterized by high mortality and morbidity. It is known that approximately 2 billion people in the world have encountered hepatitis B virus (HBV), and approximately 25% of them are infected with HBV [1]. Our country is a medium endemic region for hepatitis B. Current treatments do not eradicate the virus, suppress virus replication, prevent the progression of the disease to cirrhosis and hepatocellular carcinoma (HCC), and reduce the risk of liver-related death [2,3]. There is no indication for treatment of patients with HBV DNA below 2000 IU/ml, negative HBeAg, normal aminotransferases, and normal or minimal liver histopathology. However, over time, reactivation may be seen in these patients with the increase of HBV DNA level and aminotransferases and treatment may be indicated, so follow-up is important. The prognosis and management of the disease in chronic viral hepatitis are closely related to the determination of the extent of liver fibrosis. Although there have been improvements in non-invasive diagnostic methods such as Fibrotest and Fibroscan in recent years, liver needle biopsy (IB) is still the gold standard for determining the extent of liver fibrosis in patients with chronic hepatitis B (CHB) and histopathological follow-up of response to treatment [4]. The first percutaneous liver biopsy was performed by Paul Ehrlich in Germany in 1883, and the aspiration method was developed by Menghini towards the end of the 1950s. Today, percutaneous liver needle biopsy is performed with this technique in many centers [5,6]. As in every interventional procedure, some complications or erroneous sampling can be observed in liver biopsy. The most common complication is pain, which usually disappears within 1-2 hours after the procedure. Bleeding, peritonitis, biliary tract damage, pneumothorax, and hemothorax are rare complications that can be seen after liver biopsy. In order to prevent these, it is recommended to perform blood tests of the patients before the procedure and to be carried out in an experienced center, to follow the patients for 6 hours after the procedure, and to follow up patients at risk for a longer period of time by hospitalization. Contraindications to ICP include serious bleeding disorder (increased prothrombin time, platelet count <60000), the presence of ascites, morbid obesity, the presence of vascular lesions such as hemangioma, the presence of infection in the area to be biopsied, and uncooperative patient [7,8].

In this study, blinded percutaneous liver needle biopsy results were evaluated retrospectively and it was thought that this method can be applied for diagnosis and treatment of CHB patients in a center without interventional radiology.

Material and Methods

A total of 54 patients who underwent percutaneous blinded liver needle biopsy due to CHB between June 2016 and June 2018 in our clinic were included in this study. Demographic characteristics of the patients, aspartate aminotransferase (AST), alanine aminotransferase (ALT), platelet (PLT) and HBV DNA levels, histological activity index (HAI) according to Ishak scores in liver biopsy, and initiation of hepatitis B treatment with fibrosis were reached and recorded from the hospital automation and pathology registry system. Before the liver biopsy was performed, detailed information about the procedure and its complications was given to all patients by the physician who will perform the procedure, and written informed consent was obtained from the patients. Complete blood count, active partial thromboplastin time and prothrombin time/INR were requested from all patients before the procedure. Before the procedure, local anesthesia (1% lidocaine) was applied under the skin. The sample was taken by aspiration technique by entering through the marked intercostal space with a 17-gauge Menghini type biopsy needle (Hepafix®, B. Braun Melsungen AG 34209 Melsungen, Germany). After the procedure, the patients were hospitalized in our clinic and observed for 24 hours. The present study was approved by Aksasary University Human Research Ethics Committee (protocol number: 2021/04-23 Date: 26.04.2021).

At the end of this period, the patients without complications were discharged. IBM SPSS Statistics for Windows.Version 26.0 (Statistical Package for the Social Sciences, IBM Corp, Armonk, NY, USA) was used for statistical analysis.

Ethical Approval

Ethics Committee approval for the study was obtained.

Results

Of the 54 patients included in the present study, 13 (24%) were female and 41(76) were male. The mean age was 40.2 ± 7.9 years (19-60). In a retrospective examinations, complications did not develop in any of the cases. In addition, liver tissue could not be obtained in 3 patients (5.5%). According to liver biopsy results, oral antiviral therapy was started in 40 (78.43%) patients with HAI score ≥6 and/or fibrosis score ≥2. As an oral antiviral treatment, tenofovir disoproxil fumarate was started in 22 patients and entecavir was started in 18 patients. Since biopsy material could not be obtained in 3 patients, and 8 patients did not meet the criteria for initiation of treatment in our country, a total of 11 (21.56%) patients were not treated.

Discussion

Chronic hepatitis disease can cause serious complications such as cirrhosis and HCC (hepatocellular carcinoma) that can result in death. The main purpose of treatment in CHB is the eradication of cccDNA (covalently closed circular DNA) and HBsAg from hepatocytes. However, today, there is no drug that can eradicate the virus in cccDNA in hepatocytes [9]. With current treatments, the aim is to achieve permanent viral suppression and biochemical and histological improvement, and to prevent long-term complications such as cirrhosis and/or hepatocellular carcinoma. In order to start treatment in CHB patients, it is necessary to show the HBV DNA level and liver histopathology of the patients [10,11]. Liver needle biopsy is still used as the gold standard technique to evaluate liver histopathology in CHB patients.

Liver needle biopsy was first applied by Paul Ehrlich in Germany in 1883. Today, it is frequently used in the diagnosis and follow-up of many liver diseases [5]. Since ICP is an invasive diagnostic method and rarely causes complications that may result in death, one of the most important issues discussed is the question of performing biopsy with blind biopsy or ultrasonography. In the study by Cadranel et al. from France,

biopsies were performed with ultrasonography in 56% of 2084 patients [12]. In a retrospective study by Flemming et al., 100 hepatitis patients who underwent ultrasonography-guided and blind biopsy method were compared and no difference was found in terms of staging and grading [13]. In this study, all cases were performed as blinded percutaneous needle biopsy. For a healthy evaluation, at least 4-6 portal areas and 10-15 mm of liver material are required, and this is related to the experience of the physician [14]. In this study, 3 (5.5%) patients were excluded because sufficient biopsy material could not be obtained. Since ICP is an invasive procedure, it may cause some complications. Factors such as the biopsy technique, the experience of the healthcare personnel, and the suitability of the biopsy needle used determine the incidence and severity of complications. Intra-abdominal hemorrhage, hemobilia, biliary peritonitis, pneumothorax are among the complications and bleeding is the most important cause of death. Therefore, the bleeding parameters of the patient should be closely monitored before and after the biopsy. Supportive treatment with appropriate blood products should be applied in patients at risk of bleeding. ICP should not be performed in unsuitable patients [7].

In the study by Younossi et al., the rate of blinded percutaneous liver needle biopsy was 4%; 2% of complications were observed in liver biopsy performed with ultrasonography [15]. In the study by Pasha et al., 2.2% of complications were observed in blind biopsy and 0.5% in ultrasound guidance [16]. In the study by Reddy et al., pain was the most common complication (0.056-22%), and biliary peritonitis (0.03-0.22%) was also observed [17]. The pain is pleuritic, peritoneal, and diaphragmatic and usually responds to analgesics and lasts less than 2 hours. Severe, prolonged pain unresponsive to analgesics is indicative of serious complications such as intraperitoneal hemorrhage or chemical peritonitis. In a study by Piicino et al., 4 cases of hemobilia were observed [18]. In this study, no complications developed in any of the patients, and liver tissue could not be obtained in 3 patients (5.5%).

In studies conducted in HBe Ag-negative patients with normal ALT and high HBV DNA, significant liver damage was detected [19]. In our country, in a study conducted by Dağtekin H. et al., biopsy was performed in patients with normal ALT values, negative HBe Ag, and HBV DNA values above 2000 IU/mL, and it was determined that 56% of the patients required treatment [20]. In this study, the number of patients with normal ALT (<40 U/L) values was 38 (83.3%), and 26 (68.4%) patients had fibrosis ≥2 and/or HAI ≥6. Since this rate is high, even if the ALT value is normal, it suggests that the patient should be evaluated in terms of the necessity of treatment with a liver biopsy in patients with elevated HBV DNA. As a result, a limited number of patients could be included in the study since it was a single-center study. However, in this study, blind percutaneous liver needle biopsy performed for diagnosis and treatment in chronic hepatitis B patients was evaluated as a method that can be used in suitable patients because it does not require devices and techniques such as simultaneous fluoroscopy and ultrasonography, does not develop complications, and allows histopathological diagnosis in 51 (94.4%) patients. We think that it still maintains its importance.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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Conflict of interest

The authors declare no conflict of interest.

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